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EXAMINER	
SILVER, DAVID	
ART UNIT	PAPER NUMBER
2128	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/758,797	NACHMANSON ET AL.	
	Examiner	Art Unit	
	DAVID SILVER	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,7-15,18 and 20-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,7-15,18 and 20-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Instant Office Action is in response to a Request for Continued Examination filed 8/14/2008.

2. Claims 1-20 were originally presented for examination.

3. Claims 1, 3, 4, 7-15, 18, 20-26 are currently pending in Instant Application.

Response to Arguments

Response: Claim Interpretation

4. **Applicants argue:**

4.1 "The clauses objected to in claim 7 are in a system claim ("A computer system comprising .... ") and so is not in a method claim. Thus, the scope limiting as defined in the MPEP does not apply to it.

4.2 Moreover, when a "'whereby' clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention." [MPEP 2111.04.] The "operationally able" clauses in claim 7 state a condition that is material to patentability, and as such, cannot be ignored in order to change the substance of the invention. Nonetheless, to further examination, the phrase "operationally able to" has been amended to read "operating to." For at least these reasons, Applicants request that objection 1 to claim 7 be removed." (Remarks: page 7)

4.3 "Applicants respectfully disagree. The claim is an apparatus claim with process steps, as is allowable. In support, the MPEP states:

[[MPEP citation]]

Further, the MPEP describes the process steps in an apparatus claim as "functional limitations." As such, they are not non-descriptive subject matter, rather they are "functional limitations." Moreover, for argument only, even if the disputed clauses of claim 7 are descriptive material, such material is non-patentable only when "claimed as descriptive material per se." [MPEP 2106.01.] The disputed clauses are claimed as functional limitations of an apparatus, and therefore are most certainly not "claimed as descriptive material per se," and as such should be given patentable weight. For at least the reasons given above, Applicants respectfully request that the objection to claim 7 be removed." (Remarks: page 8)

5. **Examiner Response:**

5.1 It is noted that a claim interpretation is not an objection. Regarding the argument set-forth in sub-section 1 *supra*, attention is respectfully drawn to, for example, MPEP 2106.01.I, which recites, in part: "When a computer program is claimed in a process where the computer is executing the computer program's instructions, USPTO personnel should treat the claim as a process claim." Therefore, regardless of whether the preamble states "A computer system", because the claim is drawn to instructions (receiving, creating, splitting, etc) being executed in a computer, the claim is being treated as a process claim in accordance with the MPEP section cited above. Therefore, Applicants' arguments are unpersuasive and the interpretation is maintained.

5.2 Regarding subsection 2 *supra*, Applicants' amendments are not sufficient to overcome the claim interpretation. Attention is respectfully drawn to MPEP 2106.01.I, which recites, in part: "Computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material." Furthermore, amended claim 7 still recites "a compiler operationally able to". Accordingly, the interpretation is maintained.

Response: Claim Objections

6. **Examiner Response:**

6.1 Applicants are thanked for amending the claims to overcome the objections. Claim objections withdrawn in view of amendments.

Response: 35 U.S.C. § 103

7. **Examiner Response:**

7.1 Applicants' arguments are moot in view of new ground of rejection is necessitated by amendment.

Response: Request for Interview

8. **Examiner Response:**

8.1 Applicants' request for interview is denied as, because of the new grounds of rejection, performing an interview at this time would not aid in the prosecution of the rejection.

Claim Interpretation

9. Limitations drawn to allowing, enabling or making optional a function's performance does not further limit a claim. This also applies to use of language "such as" and other similar language. As such, any prior art not explicitly prohibiting the performance of the function inherently anticipates the limitation. See MPEP 2111.04.

10. Furthermore, the "programs" listed in claim 7 are not given patentable weight in view of MPEP 2106.01.I. MPEP 2106.01.I, which recites, in part: "Computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material."

11. The "operationally able to" recited in claim 7 is not given patentable weight in view of the above.

12. Claim 7's "program" limitations are not "tied" to the memory and CPU. The claim language reciting memory and CPU ends with a comma, and not a colon which implies that only the following limitation is part of the memory and CPU limitation. Furthermore, the program limitations are not indented to signal that they are part of the memory and being executed by the CPU.

Claim Objections

13. Claim 1 is objected-to because: the limitation starting with the word "splitting" should end with a semicolon.

Claim Status - 35 U.S.C. § 101

> MPEP 2106.02 recites, in part: "When a computer program is claimed in a process where the computer is executing the computer program's instructions, USPTO personnel should treat the claim as a process claim. ** When a computer program is recited in conjunction with a physical structure, such as a computer memory, USPTO personnel should treat the claim as a product claim. **"

14. Claim 1 (and its dependents) is deemed **statutory** because of 1) the physical aspects of the claimed invention (computer) and 2) "storing" aspects of the claimed invention.

15. Claim 7 (and its dependents) is deemed **statutory** because of the physical elements (memory and central processing unit). In view of MPEP 2106.02 (recited above), it is being interpreted as a

process.

16. Claim 15 (and its dependents) is deemed **statutory** because of the physical tangible elements (tangible computer-readable medium). In view of MPEP 2106.02 (recited above), it is being interpreted as a product.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 1, 3, 4, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee **(US 5,659,555)**, and further in view of Sun **(US 5630051)**, in further view of Kadkade **(US 7290193)**, and further in view of Farchi **(US 20030046609)**.

Lee discloses: 1. A computerized method of creating test coverage for non-deterministic programs within a testing environment comprising:

In a computer, receiving a graph of edges and states representing a program under test, the states comprising at least one deterministic state controllable by the testing environment and at least one non-deterministic state uncontrollable by the testing environment **(col: 5 line: 12-17; col: 6 line: 8-25; col: 7 line: 30-42)**;

creating a continuous cycle of edges and states through the graph that reaches each state in the graph at least once **(col: 12 line: 4-14)**;

executing the program under test as a first execution of the program **(col: 8 line: 37-51)**;

determining untested states as states in the discrete sequences not reached by the first execution of the program **(col: 4 line: 10-25; col: 8 line: 3-10; Fig 5 and descriptions; col: 11 line: 24-34)**;

calculating, for at least some deterministic states, a probability that during program execution, a path from a given deterministic state will reach a given untested state; calculating, for the at least some

deterministic state, a number of edges between the a plurality deterministic state and the untested state as the cost

creating strategies through the graph that have a higher probability of reaching discrete sequences not reached by the program **(col: 4 line: 11-23; col: 8 line: 37-51)**;

storing a representation of the created strategies in computer memory; and

executing the program under test under test conditions using the stored created strategies that cause the program to have a higher probability to execute through states that correspond to the untested program behavior **(col: 4 line: 11-23; col: 8 line: 37-51)**.

Lee however does not expressly disclose calculating, for at least some deterministic states, a probability that during program execution, a path from the deterministic state will reach given untested state; calculating, for the at least some deterministic state, a number of edges between the at least one deterministic state and the corresponding untested state as cost.

Sun however discloses the missing limitation (Fig 10(c) and description; col: 13 line: 66 to col: 14 line: 6). Furthermore, Kadkade discloses the said limitation in **(col: 14 line: 40 to col: 15 line: 8)**. It would have been obvious to one of ordinary skill in the art <program modeling and simulation / behavior testing / coverage testing> at the time of Applicant's invention to combine the references and their features.

MPEP 2144.III states (based on the KSR vs. Teleflex Supreme Court Ruling, in part:

Exemplary rationales that may support a conclusion of [...] (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results"

Accordingly, the following rationale is provided: one of ordinary skill could have applied the known improvement of the feature missing in the primary reference and the results would have been predictable. The analogous systems are both drawn to substantially identical subject matter of testing program behavior and evaluation of untested functions (in case of Sun that correlates to sections of code resulting in faults) with claimed nondeterministic features. As such, the combination would have been obvious for the reasons set-forth above. Motivation and common knowledge is further provided by

Kadkade in **(col: 14 line: 40 to col: 15 line: 8)**.

The combination of Lee in view of Sun in view of Kadkade does not expressly teach "determining discrete sequences not reached by the first execution of the program;" and "splitting the continuous cycle into discrete sequences that end at the non-deterministic states".

Farchi however discloses an analogous system having the said features **(para 35, 36; 43)**. One issue of confusion that may arise and is therefore being currently addressed is that within the Farchi reference the term "tasks" correlates to the claimed "sequences", and the term "sequences" in the Farchi references roughly correlates to the claimed term "strategies". See, for example, Farchi **(para 0006)** for the definition of "tasks" and **(para 0043)** for the term "sequence".

It would have been obvious to one of ordinary skill in the art < program modeling and simulation / behavior testing / coverage testing > at the time of Applicant's invention to combine the references in order to perform coverage of non-deterministic states as well as find better suited methods of reaching such states.

Lee discloses: 3. The method of claim 1 wherein the continuous cycle of edges is created from the graph input using a Chinese Postman tour algorithm **(col: 2 line: 56 to col: 3 line: 9)**.

Lee discloses: 4. The method of claim 1 wherein the graph states are received as a set of deterministic vertices and a set of non-deterministic vertices **(col: 2 line: 28-36)**.

Kadkade discloses: 21: The method of claim 1 wherein calculating probability comprises calculating the probability that a nondeterministic state on a path from the deterministic state to the untested state will choose an edge that leads to the untested state **(col: 14 line: 40 to col: 15 line: 8; col: 15 line: 23-44)**.

Farchi discloses: 22: The method of claim 1 wherein the calculating the probability comprises determining the number of edges leaving the nondeterministic state as k, and calculating the probability as 1/k **(Fig 3 and description; para 37-38)**.

Kadkade discloses: 23: The method of claim 1 further comprising walking backwards from the untested state to a second deterministic state **(col: 26 line: 51-58)**.

18. Claims 7-15, 18, 20, 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee **(US 5,659,555)**, further in view of Sun **(US 5630051)** in further view of Kadkade **(US 7290193)** and further in view of Kranzlmuller's "NOPE: A nondeterministic Program Evaluator" ("Kranzlmuller") and further in view of Farchi **(US 20030046609)**..

As per claim 7, note the rejection of claim 1 above. The Instant Claim recites substantially same limitations as the above-rejected claim and is therefore rejected under same prior-art teachings, but for memory and a central processing unit executing **(inherent)**, a compiler operationally able to compile an executable specification into an abstract state machine **(Fig 3 item 305 and Fig. description)**, a graphing program operationally able to create a continuous cycle touching all edges of the abstract state machine, **(col: 5 line: 12-17; col: 6 line: 8-25; col: 5 line: 8-15; col: 6 line: 26-35; col: 4 line: 11-23; col: 8 line: 37-51)**.

The limitation of operationally able to split the continuous cycle into discrete sequences that end at non-deterministic states is not expressly taught by the Lee in view of Sun rejection. Kranzlmuller however discloses the said missing feature. Kranzlmuller however discloses the missing limitation of splitting (page 490 section 1 "A traditional approach to error detection is cyclic debugging. [...] f is split up into subfunctions f1, f2,... fn and repeated executions of f are used to determine the correct states between these subfunctions by analyzing intermediate results.". It would have been obvious to one of ordinary skill in the art <program modeling and simulation / behavior testing> at the time of Applicant's invention to combine the references and their features.

MPEP 2144.III states (based on the KSR vs. Teleflex Supreme Court Ruling, in part:

> Exemplary rationales that may support a conclusion of [...] (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results"

Accordingly, the following rationale is provided: one of ordinary skill could have applied the known improvement of splitting the function effectively using a finer resolution by splitting the function into pieces in the same way to Lee's disclosure and the results would have been predictable. The analogous systems are both drawn to substantially identical subject matter of testing program behavior

and evaluation of untested functions (in case of Kranzlmuller that correlates to sections of code resulting in errors) with claimed nondeterministic features. As such, the combination would have been obvious for the reasons set-forth above.

Lee discloses: 8. The system of claim 7 wherein a continuous cycle is determined according to a Chinese Postman algorithm **(col: 2 line: 56 to col: 3 line: 9)**.

Lee discloses: 9. The system of claim 7 wherein discrete sequences comprise beginning states reachable from edges exiting non-deterministic states **(Fig 5 and its description; col: 12 line: 4-14)**.

Lee discloses: 10. The system of claim 7 wherein an untouched discrete sequence is a state selectable from a program code executing at a remote computer **(Fig 2 item 7 (and Figure's descriptions) Application which is coupled to Presentation to Session to Transport to Network from Host A to Host B and is therefore remote)**.

Lee discloses: 11. The system of claim 7 wherein the abstract state machine comprises a graph of states and edges **(col: 6 line: 8-25)**.

Lee discloses: 12. The system of claim 11 wherein the strategy calculation program receives the graph and an edge probability function as input **(Fig 5 and its descriptions)**.

Lee discloses: 13. The system of claim 7 wherein untouched discrete sequences represent less than 10% of the discrete sequences and all untouched discrete sequences are touched when the program is executed according to the created strategies **(col: 8 line: 52 to col: 9 line: 7; a program without untouched discrete sequences anticipates this limitation)**.

Lee discloses: 14. The system of claim 7 wherein not all untouched discrete sequences are verified when the program is executed according to the created strategies **(col: 4 line: 16)**.

As per claim 15, note the rejection of claims 1 and 7 above. The Instant Claim recites substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings, wherein the "identified behavior" correlates to the "untested program behavior" because the untested program behavior has to inherently be identified as being untested. Arguments to the contrary (arguments stating that untested behavior is not inherently identified) may result in claims 1, 15, and their respective

dependent claims being rejected for 35 U.S.C. § 112 P1 enablement deficiencies.

Lee discloses: 18. The computer-readable medium of claim 15 wherein the non-deterministic behavior comprises communications with a remote computer **(col: 5 line: 18-25: "An FSM sends a message to other FSMs by means of an "output operation" designated by the "!" symbol. Where, for example, there are two FSMs, machine #1 and machine #2, an output operation in machine #1 is denoted by machine2!msg")**.

Lee discloses: 20. The computer-readable medium of claim 15 wherein the instructions for verifying program behavior cause the program to execute code that verifies that the program is in an expected model state **(col: 2 line: 28-36; col: 8 line: 37-51)**.

As per claims 24 and 26, note the rejection of claims 21 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

As per claims 25, note the rejection of claims 23 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

Support for Amendments and Newly Added Claims

19. Applicants are respectfully requested, in the event of an amendment to claims or submission of new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02 recites: "Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37 CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments not pointing to specific support in the disclosure may be deemed as not complying with provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.** Generic statements such as "Applicants believe no new matter has been introduced" may be deemed insufficient.

Requests for Interview

20. In accordance with 37 CFR 1.133(a)(3), requests for interview must be made in advance.

Interview requests are to be made by telephone (571-272-8634) call or FAX (571-273-8634). Applicants must provide a detailed agenda as to what will be discussed (generic statement such as "discuss §102 rejection" or "discuss rejections of claims 1-3" may be denied interview). The detail agenda along with any proposed amendments is to be written on a PTOL-413A or a custom form and should be faxed (or emailed, subject to MPEP 713.01.I / MPEP 502.03) to the Examiner at least 3 days prior to the scheduled interview.

21. Interview requests submitted within amendments may be denied because the Examiner was not notified, in advance, of the Applicant Initiated Interview Request and due to time constraints may not be able to review the interview request to prior to the mailing of the next Office Action.

Conclusion

22. All claims are rejected.

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ DS /

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